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EXAMINER	
NGUYEN, NAM V	
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2635	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/588,997	CARRENDER ET AL.	
	Examiner	Art Unit	
	Nam V Nguyen	2635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☒ Claim(s) *22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This communication is in response to applicant's response to amendment A which is filed March 07, 2003.

An amendment to the claims 1-4, 6-8, 10-15, 17-20, 22-23 and 25-28 have been entered and made of record in the application of Carrender et al. for a "phase modulation in RF tag" filed June 6, 2000.

Claims 1-28 are pending.

Response to Arguments

Applicant's amendment and argument with respect to the pending claims 1, 17 and 25, filed July 12, 2003, are persuasive. Therefore the examiner has withdrawn the rejections.

Applicant's amendments to the rejected claims are insufficient to distinguish the claimed invention from the cited prior arts or overcome the rejection of said claims under 35 U.S.C §103(a) as discussed below. Applicant's amendment and argument with respect to the pending claims 2-16, 18-24 and 26-28, filed March 7, 2003, have been fully considered but they are not persuasive for at least the following reasons.

On page 9, last paragraph, Applicant's arguments with respect to the invention in Hirata et al. does not teach or suggest that there is no driver coupled between the memory and the diode is not persuasive.

Hirata et al. teach that a diode (53 or 63) having two terminals. The first terminal (P1) connects to an antenna (B1) and the second terminal (31) connects to a code generator (D) (see Figure 1). The code generator has a memory (36) and a counter (35) (see Figure 2). From the diagram flow chart of Figure 1, the terminal (31) is an input and the terminal 32 is an output. One of ordinary skilled in the art understands that the signal is coming in at the terminal (31) and data process in the counter (35) and transfer to the memory (36) and output the signal to the terminal (32) (see Figure 2). Hirata et al. disclose that the CPU (1130) connects between the RAM (1140) and the modulator (see Figure 17). As show in Figures 3 to 13, the modulator (C) has many preferred embodiments which connect to the code generator (D). The modulator has a diode (53 or 63 in Figure 4 and 5) that connects to code generator (D). Therefore, the processor (36) connects between the memory (36) and a diode (53).

On page 10, second paragraph, Applicant's arguments with respect to the invention in Hirata et al. does not teach or suggest that the claim 6 is not anticipated by Hirata et al. is not persuasive.

Hirata et al. teach that a second diode (190) having two terminals. The first terminal connects to an antenna (B1) and the second terminal connects to a stub (184) and the parallel RC circuit (186 and 185) (column 13 lines 48 to 62; see Figure 15). As show in Figures 1-5, the modulator (C) has a first diode which has one terminal connect to the antenna (B1) and the other

diode connect to the code generator (D). As discuss claim 4 above, one of ordinary skilled in the art understands that the signal is coming in at the terminal (31) and data process in the counter (35) and transfer to the memory (36) and output the signal to the terminal (32) (see Figure 2). Hirata et al. disclose that the CPU (1130) connects between the RAM (1140) and the modulator (D) (see Figure 17). As show in Figures 3 to 13, the modulator (C) has many preferred embodiments which connect to the code generator (D). The modulator has a diode (53 or 63 in Figure 4 and 5) that connects to code generator (D). Therefore, the processor (36) connects between the memory (36) and a diode (53).

On page 10, last paragraph, to page 11, Applicant's arguments with respect to the invention in Hirata et al. does not teach or suggest that a response signal containing a plurality of phases in addition to a phase that is substantially identical to a phase of the interrogation signal is not persuasive.

Hirata et al. teach that the modulator or rectification complex circuit (C) has a modulator (C1) which is designed as a phase modulator for changing a signal phase between 90 degree to minus 90 degree (column 5 lines 41 to 66). One of ordinary skilled in the art understands that the modulator able to change to different signal phases, the modulator is structured to have plurality of phases. Also Beccone et al. disclose that using the signal translator to control the switches (17 and 19) to terminate the transmission lines of varying length in order to have plurality of different discrete phase shifts to the carrier waves.

Claim Objections

Claim 22 is objected to because of the following informalities: Claim 22 amended that wherein the diode means include: a first diode, a second diode, a stub, RC circuit and a driver. However, a diode as claimed cannot include all these elements. It is suggested to change to the previous claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7, 10-12, 14, 17-22 and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al. (US# 5,247,305) in view of Haruyama et al. (US# 5,119,099).

Referring to claims 1, 17 and 25, Hirata et al. disclose responder in movable-object identification system as recited in claims 1, 17, and 25. See Figures 1, 14 and respective portions of the apparatus and method.

Hirata et al. disclose a radio frequency transponder (B) (column 1 lines 50 to 60; see Figure 1), comprising:

An antenna (B1) for receiving an interrogation signal (column 3 lines 46 to 50);

A memory (36; see Figure 2) that stores an information code (column 3 lines 56 to 63; column 4 lines 4 to 9); and

A phase modulator (C) comprising:

A switch (61) (i.e. transistor; see Figure 5) having a control terminal (P3) and first (P1) and second conduction terminals (P2) (column 6 lines 44 to 49), the first conduction terminal (P1) being coupled to the antenna (B1) (column 6 lines 49 to 50; See Figure 1); and

a driver (D) coupled between the memory (36) and the control terminal (P3) of the switch (61) (see Figure 2), the driver (D) (column 7 lines 9 to 12; column 7 lines 12 to 18).

However, Hirata et al. did not explicitly disclose that a stub coupled to the second conduction terminal of the switch. Hirata et al. disclose that the second conduction terminal of the switch (61) connected to a load resistor (62) to modulate and a stub (184) coupled to the second conduction terminal (P2) of the switch (190) (i.e. a diode) (column 13 lines 48 to 56; see Figures 14 and 15) in order to have a quarter wavelength of the handled RF electric power.

In the same field of endeavor of responder in identification system, Haruyama et al. teaches that a stub (4) coupled to the second conduction terminal (i.e. the Source terminal) of the switch (3) (i.e. a FET switch) (column 1 lines 38 to 62; see Figure 9) in order to shift the phase of the responder.

One of ordinary skilled in the art understands that connecting a stub to a conduction terminal of a FET switch of Haruyama et al. in the conduction terminal that connect to a load resistor of the switch of Hirata et al. because a stub that is connected to a source terminal of a FET switch would change the phase of the modulator to a fix wavelength when the FET switch

is ON that has been shown to be desirable in the phase modulator of the responder in a movable object identification system of Hirata et al.

Referring to claims 2, 18 and 26, Hirata et al. in view of Haruyama et al. disclose the transponder of claims 1, 17 and 25, Hirata et al. disclose wherein the stub (184) is a quarter-wavelength stub (column 13 lines 48 to 56; see Figure 15);

Referring to claim 3, 19 and 21, Hirata et al. in view of Haruyama et al. disclose the transponder of claims 1, 17 and 20, Hirata et al. disclose wherein the driver (D) includes a microprocessor (1130) (column 14 lines 62 to 64; see Figure 17).

Referring to claims 4, 12, 20 and 27, Hirata et al. in view of Haruyama et al. disclose, to the extent of claim 1 above, Hirata et al. disclose a phase modulator (B) having: a diode (53; see Figure 4) coupled to the antenna (B1) and a driver (1130) (i.e. a microprocessor; see Figure 17) coupled between the memory (1140) and the diode (53), the driver (1130) being structured to produce a modulating signal corresponding to the information code (column 7 lines 9 to 12), the modulating signal being a variable voltage that modulates a capacitance of the diode (63) to phase modulate the interrogation signal (S1) and thereby produce the response signal (S2) (column 7 lines 38 to 40; column 9 line 58 to column 10 line 7).

Referring to claim 5, Hirata et al. in view of Haruyama et al. disclose the transponder of claim 4, Hirata et al. disclose wherein the driver (D) includes a microprocessor (1130) (column 14 lines 62 to 64; see Figure 17).

Referring to claims 6 and 22, Hirata et al. in view of Haruyama et al. disclose, to the extent of claims 1 and 20 above, Hirata et al. disclose a phase modulator (B) having:

A first diode (71; column 8 lines 10 to 16; see Figure 6) having first (P3) and second ends (J3), the second end being coupled to the antenna (B1) (see Figure 1);

A second diode (73; column 8 lines 3 to 10) having first (J3) and second ends (P2); the first end (J3) being coupled to the antenna (B1) and the second end of the first diode (71);

A quarter-wavelength stub (184; see Figure 15) coupled to the second end of the second diode (190) (column 13 lines 48 to 56);

A parallel RC circuit (185 and 186) coupled between the stub (184) and a reference voltage (i.e. Ground) (column 13 lines 48 to 62; see Figure 15); and

a driver (D) coupled between the memory (1140; see Figure 17) and the first end (P3) of the first diode (71), the driver (D) being structured to produce a modulating signal corresponding to the information code (column 7 lines 9 to 12).

Referring to claim 7, Hirata et al. in view of Haruyama et al. disclose, to the extent of claim 1 above, Hirata et al. disclose wherein the phase modulator (C) is structured to include in the response signal (S2) a plurality of phases (i.e. phase different) in addition to a phase that is substantially identical to a phase of the interrogation signal (S1) (column 5 lines 46 to 66).

Referring to claim 10, Hirata et al. in view of Haruyama et al. disclose a radio frequency communication system (column 3 lines 4 to 10; see Figure 1), comprising:

An interrogator (A) that transmits a radio frequency interrogation signal (S1) and receives a backscatter response signal (S2) (column 3 lines 11 to 21);

A transponder (B) (column 3 lines 46 to 50) that receives the interrogation signal (S1) and transmits the response signal to the interrogator (S2) (column 3 lines 61 to 68), the transponder (B) includes to the extent as claimed with respect to claims 1 and 4 above.

Referring to claim 11, Hirata et al. in view of Haruyama et al. disclose the transponder of claim 10, Hirata et al. disclose wherein the stub (184) is a quarter-wavelength stub (column 13 lines 48 to 56; see Figure 15);

Referring to claims 14 and 28, Hirata et al. in view of Haruyama et al. disclose the transponder to the extent of claim 10 above, Hirata et al. disclose the phase modulator (C) structured to include in the response signal (S2) a plurality of phases (i.e. phase different) in addition to a phase that is substantially identical to a phase of the interrogation signal (S1) (column 5 lines 46 to 66).

Claims 8-9, 15-16 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al. (US# 5,247,305) in view of Haruyama et al. (US# 5,119,009) as applied to

claims 4, 7 and 25 above, or in the alternative to the extent of claim 20, and in view of Beccone et al. (US# 3,656,069).

Referring to claims 8-9, 15-16, 23-24 and 28, Hirata et al. in view of Haruyama et al. disclose a responder in a movable-object identification system of claims 4, 7 and 25, however, Hirata et al. did not explicitly disclose the phase modulator includes a first, a second and a third phase changers that produces in the response signal respective first, second and third phases that are each different than a phase of the interrogation signal, each of the phase changers include a switch coupled between the antenna and a stub having a length other than a wavelength of the interrogation signal.

In the same field of endeavor of multiphase digital modulator, Beccone et al. teach that the phase modulator (see Figure 1) includes a first (i.e. carrier source original phase), a second (A) and a third phase changers (C) that produces in the response signal respective first (0 degree), second (225 degree) and third phases (90 degree) that are each different than a phase of the interrogation signal (zero degree reference), each of the phase changers include a switch (17 or 19) coupled between the antenna (15) and a stub having a length (A to B and A to C) other than a wavelength of the interrogation signal (column 3 lines 43 to column 4 lines 10) in order to obtain the best multi-phase modulation transmission strategy for transmitting backscatter signal.

One of ordinary skilled in the art recognizes the need to add the multiphase digital modulator of Beccone et al. in phase changer of the phase modulator of Hirata et al. in view of Haruyama et al. because Hirata et al. suggest it is desired to change a signal phase between 90 degree to –90 degree or to change to different phases range (column 5 lines 46 to 50; column 6

lines 16 to 20 to 24) and Beccone et al. teach that providing first, second, and third diodes along the reflecting transmission line, each for short-circuiting the reflecting transmission line when actuated and actuated each of the phase by individual switches (column 1 lines 6 to 65) in order to provide four-level phase modulation to minimize the likelihood of faulty discrimination. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to add the multiphase digital modulator of Beccone et al. in phase changer of the phase modulator of Hirata et al. in view of Haruyama et al. with the motivation for doing so would have been to produces a multiphase response signal that is transmitted back from the radio frequency transponder to the interrogator.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al. (US# 5,247,305) in view of Entschladen et al. (US# 4,918,749).

Referring to claim 13, Hirata et al. disclose a radio frequency communication system, to the extent of claim 6 above, the transponder further includes:

A first diode (183; column 8 lines 10 to 16; see Figures 15 and 20) having an anode and a cathode (see Figure 1);

A second diode (73; column 8 lines 3 to 10) having an anode (J3) and a cathode (P2), the anode of the second diode being coupled to the antenna (B1) and to the cathode of the first diode.

However, Hirata et al. did not explicitly disclose the cathode of the first diode being coupled to the antenna (B1). Hirata et al. disclose the anode of the first diode being coupled to the antenna (B1).

In the same field of endeavor of receiving circuitry, Entschladen et al. teach that the cathode of the first diode (i.e. D2) being coupled to the antenna (1) (column 2 lines 60 to column 3 lines 15; see Figures 1 and 2) in order to rectify and to double the voltage in connection with capacities.

At the time the invention, it would have been obvious to a person of ordinary skill in the art to recognize an alternative way to connect the first diode to an antenna by the cathode being coupled to the antenna of Entschladen et al. in the first diode of Hirata et al. because a diode with the cathode connected to an antenna would generate a high output operating voltage of the circuit in order to improve reliable of detection circuitry that has been shown to be desirable in the receiver circuitry of Hirata et al.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Uchida et al. (US# 6,130,580) disclose a microwave amplifier optimized for stable operation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nam V Nguyen whose telephone number is 703-305-3867. The examiner can normally be reached on Mon-Fri, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik can be reached on 703-305-4704. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Nam Nguyen
June 13, 2003

NN

MICHAEL HORABIK
SPE AU 2635